

WHAT IS CLAIMED IS:

1. A peptide which specifically targets and binds to a dendritic cell.
- 5 2. The peptide of claim 1, wherein said dendritic cell is a myeloid dendritic cell.
3. The peptide of claim 2, wherein said peptide is a 12 amino acid residue peptide.
- 10 4. The peptide of claim 3, wherein said peptide has an amino acid sequence selected from the group consisting of SEQ ID NOS: 1-20.
- 15 5. The peptide of claim 1, wherein said dendritic cell is a Langerhans dendritic cell.
6. The peptide of claim 5, wherein said peptide is a 12 amino acid residue peptide.
- 20 7. The peptide of claim 6, wherein said peptide has an amino acid sequence selected from the group consisting of SEQ ID NOS: 21-37.
8. The peptide of claim 1, wherein said dendritic cell is a plasmacytoid dendritic cell.
- 25 9. A fusion protein, comprising:
a peptide which specifically targets and binds to a dendritic cell; and
a non-dendritic cell protein or fragments thereof.
- 30 10. The fusion protein of claim 9, wherein said non-dendritic cell protein is a tumor associated antigen.

11. The fusion protein of claim 10, wherein said tumor associated antigen is Melan A, MAG-3, gp100, or her2/neu.

12. The fusion protein of claim 9, wherein said non-dendritic cell protein
5 is an inhibitor of dendritic cell function or activity.

13. A vaccine delivery system, comprising:
a peptide which specifically targets and binds to dendritic cells; and
a virus specific protein; or
10 a bacteria specific protein; or
a tumor associated antigen; or
fragments thereof.

14. The vaccine delivery system of claim 13, wherein said dendritic cell
15 is a myeloid dendritic cell.

15. The vaccine delivery system of claim 13, wherein said peptide is a
12 amino acid residue peptide.

16. The vaccine delivery system of claim 15, wherein said peptide has
20 an amino acid sequence selected from the group consisting of SEQ ID NOS: 1-20.

17. The vaccine delivery system of claim 13, wherein said dendritic cell
is a Langerhans dendritic cell.
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18. The vaccine delivery system of claim 17, wherein said peptide is a
12 amino acid residue peptide.

19. The vaccine delivery system of claim 18, wherein said peptide has
30 an amino acid sequence selected from the group consisting of SEQ ID NOS: 21-37.

20. The vaccine delivery system of claim 13, wherein said dendritic cell is a plasmacytoid dendritic cell.

21. The vaccine delivery system of claim 13, wherein said virus specific protein is from HCV, HIV, Ebola, rotavirus, or any pathogenic human virus.

22. The vaccine delivery system of claim 21, wherein said HCV protein is NS3, E1 or E2.

23. The vaccine delivery system of claim 21, wherein said HIV protein is Nef, gp120 or gag.

24. The vaccine delivery system of claim 21, wherein said Ebola protein is subunit GP or subunit VP40.

25. The vaccine delivery system of claim 13, wherein said tumor associated antigen is Melan A, MAG-3, gp100 or HER2/Neu.

26. The vaccine delivery system of claim 13, wherein said bacteria specific protein is from *Bacillus anthracis*, *Yersinia pestis* or any pathogenic human bacterium.

27. The vaccine delivery system of claim 26, wherein said *B. anthracis* protein is protective antigen.

28. The vaccine delivery system of claim 26, wherein said *Y. pestis* protein is F1-V.

29. The vaccine delivery system of claim 13, wherein said system is expressed in a bacterial host.

30. The vaccine delivery system of claim 29, wherein said bacterial host is *Salmonella*.

31. A method of promoting an immune response in an individual in need of such treatment, comprising:

administering to said individual an effective amount of a composition comprising:

a peptide which specifically targets and binds to dendritic cells; and

a virus specific protein; or

a bacteria specific protein; or

a tumor associated antigen;

or fragments thereof.

32. The method of claim 31, wherein said dendritic cell is a myeloid dendritic cell.

33. The method of claim 31, wherein said peptide is a 12 amino acid residue peptide.

34. The method of claim 33, wherein said peptide has an amino acid sequence selected from the group consisting of SEQ ID NOS: 1-20.

35. The method of claim 31, wherein said dendritic cell is a Langerhans dendritic cell.

36. The method of claim 31, wherein said peptide is a 12 amino acid residue peptide.

37. The method of claim 36, wherein said peptide has an amino acid sequence selected from the group consisting of SEQ ID NOS: 21-37.

38. The method of claim 31, wherein said dendritic cell is a plasmacytoid dendritic cell.

39. The method of claim 31, wherein said virus specific protein is from HCV, HIV, rotavirus, or Ebola.

5 40. The method of claim 39, wherein said HCV protein is NS3, E1 or E2.

41. The method of claim 39, wherein said HIV protein is Nef, gp120 or gag.

10 42. The method of claim 39, wherein said Ebola protein is subunit GP or subunit VP40.

43. The method of claim 31, wherein said tumor associated antigen is Melan A, MAG-3, gp100 or her2/neu.

15 44. The method of claim 31, wherein said bacteria specific protein is from *Bacillus anthracis*, *Yersinia pestis* or any pathogenic human bacterium.

20 45. The method of claim 44, wherein said *B. anthracis* protein is protective antigen.

46. The method of claim 44, wherein said *Y. pestis* protein is F1-V.

25 47. The method of claim 31, wherein said peptide and said system is expressed in a bacterial host.

48. The method of claim 47, wherein said bacterial host is *Salmonella*.

30 49. A DNA sequence encoding a peptide which specifically targets and binds to dendritic cells.

50. The DNA sequence of claim 49, wherein said dendritic cell is a myeloid dendritic cell.

51. The DNA sequence of claim 49, wherein said peptide is a 12 amino acid residue peptide.

52. The DNA sequence of claim 51, wherein said peptide has an amino acid sequence selected from the group consisting of SEQ ID NOS: 1-20.

53. The DNA sequence of claim 49, wherein said dendritic cell is a Langerhans cell.

54. The DNA sequence of claim 53, wherein said peptide is a 12 amino acid residue peptide.

55. The DNA sequence of claim 54, wherein said peptide has an amino acid sequence selected from the group consisting of SEQ ID NOS: 21-37.

56. The DNA sequence of claim 49, wherein said dendritic cell is a plasmacytoid dendritic cell.

57. The DNA sequence of claim 49, wherein said DNA sequence encodes a peptide having at least 80% homology to a peptide having an amino acid sequence selected from the group consisting of SEQ ID NOS: 1-20.

58. The DNA sequence of claim 49, wherein said DNA sequence encodes a peptide having at least 80% homology to a peptide having an amino acid sequence selected from the group consisting of SEQ ID NOS: 21-37.

59. A DNA sequence encoding a fusion protein, said fusion protein comprising:

a peptide which specifically targets and binds to dendritic cells; and

a non-dendritic cell protein or fragments thereof.

60. The DNA sequence of claim 59, wherein said non-dendritic cell protein is a tumor associated antigen.

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61. The DNA sequence of claim 60, wherein said tumor associated antigen is Melan A, MAG-3, gp100 or her2/neu.

62. The DNA sequence of claim 59, wherein said non-dendritic cell protein is an inhibitor of dendritic cell function or activity.

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63. The DNA sequence of claim 59, wherein said peptide has an amino acid sequence selected from the group consisting of SEQ ID NOS: 1-20.

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64. The DNA sequence of claim 59, wherein said peptide has an amino acid sequence selected from the group consisting of SEQ ID NOS: 21-37.

65. A peptide which specifically targets and binds to dendritic cells having a sequence at least 80% homology to a peptide having an amino acid sequence selected from the group consisting of SEQ ID NOS: 1-20.

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66. A peptide which specifically targets and binds to dendritic cells having a sequence with at least 80% homology to a peptide having an amino acid sequence selected from the group consisting of SEQ ID NOS: 21-37.

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67. A fusion protein, comprising:

a peptide which specifically targets and binds to dendritic cells having a sequence at least 80% homology to a peptide having an amino acid sequence selected from the group consisting of SEQ ID NOS: 1-20; and

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a non-dendritic cell protein or fragments thereof.

68. The fusion protein of claim 67, wherein said non-dendritic cell protein is a tumor associated antigen.

69. The fusion protein of claim 68, wherein said tumor associated antigen is Melan A, MAG-3, gp100 or HER2/Neu.

70. The fusion protein of claim 67, wherein said non-dendritic cell protein is an inhibitor of dendritic cell function or activity.

71. A fusion protein, comprising:
a peptide which specifically targets and binds to dendritic cells having a sequence at least 80% homology to a peptide having an amino acid sequence selected from the group consisting of SEQ ID NOS: 21-37; and
a non-dendritic cell protein or fragments thereof.

72. The fusion protein of claim 71, wherein said non-dendritic cell protein is a tumor associated antigen.

73. The fusion protein of claim 72, wherein said tumor associated antigen is Melan A, MAG-3, gp100, or her2/neu.

74. The fusion protein of claim 71, wherein said non-dendritic cell protein is an inhibitor of dendritic cell function or activity.

75. A multivalent vaccine delivery system, comprising:
at least two peptides which specifically target and bind to dendritic cells;
and
at least two virus specific proteins.